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The precollege career choices of National Merit Scholars and the extent to which these choices remained stable or changed 7 to 8 years after these students entered college were determined. From 1956 through 1960, the students' vocational plans were obtained from a personal data form completed during their senior year in high school. These same scholars submitted information concerning their career plans or choices in the Summer of 1965. The most popular initial choices among men were the physical sciences, mathematics and engineering. Among women, the physical sciences, mathematics and education were most often chosen. From the data collected in 1965, it was evident that a considerable change in career objectives occurred in both sexes. Among men, engineering suffered the greatest loss of talent to other career fields. Medicine, law and the biological sciences were the only fields keeping at least 50 percent of their initial recruits. Education initially attracted large proportions of women, but subsequently lost many of them to other fields. (CS)

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ABSTRACT

The purposes of this study were to report the precollege career plans of Merit Scholars and to trace the extent to which their precollege career plans remained stable or changed seven to eight years after they entered college. Among men, the physical sciences, mathematics, and engineering were consistently the most popular initial choices. Women most often chose the physical sciences, mathematics, and education as precollege career objectives. Neither sex expressed much interest in entering the biological or social sciences. Considerable change among career fields was found for each sex. Among men, engineering suffered the greatest loss of talent to the other career fields; medicine, law, and the biological sciences were the only fields keeping at least 50 percent of their initial recruits. Education initially attracted large proportions of women, but subsequently lost many of them to other fields.

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Donivan J. Watley

National Merit Scholarship Corporation

The chronic scarcity of high level talent in almost all fields insures that the distribution of able students among the various career fields will be watched with more than casual interest. But the competitive scramble for able recruits has implications beyond insuring that each field gets what it believes to be its fair share of talented youth; it has direct and critical relevance to the nation's welfare, since it is in the national interest for the limited supply of talent to be devoted optimally toward the solution of pressing problems. Although there would undoubtedly be wide disagreement among authorities concerning the optimum distribution of talent among career fields, the recent campaign to attract bright students into science, engineering, and teaching programs seems to represent some consensus of opinion regarding the need for talent in these fields.

This paper concerns the career decisions of a segment of our nation's ablest youth--winners of National Merit Scholarships. Its first purpose is to report their precollege career plans. This information tells only half the story, however: their initial intentions. The second aim is to trace the extent to which precollege plans remained stable or changed during their college years. These data should provide information relevant to the question of changes in the distribution of talent after students enter college.

Since 1956 the National Merit Scholarship Corporation has annually identified and honored the nation's most intellectually capable high school graduates. These students, who score within the top 1 per cent on tested scholastic aptitude, possess unusual potential for future achievement. To

accomplish the aims of this study, the precollege career choices of the Merit Scholars selected from 1956 through 1960 were first tabulated and then compared with their plans as of the summer of 1965. Thus, depending on the year a Scholar entered college, five to nine years had elapsed when the followup information was collected. By that time, it seems probable that their decisions were fairly permanent. However, since some Scholars were still in college, all had not yet actually entered their career fields.

Method

The nation wide talent search by the National Merit Scholarship Corporation is conducted in three stages. First, the National Merit Scholarship Qualifying Test (NMSQT) is administered to students near the end of their junior year in high schools that enroll approximately 95 per cent of all eleventh-grade students in the United States. Those scoring in approximately the top 2 per cent of each state are then selected as Semifinalists. In 1960, 550,000 students from 14,549 high schools took part in this program; 10,181 of them became Semifinalists.

Next, a second test is administered--the Scholastic Aptitude Test of the College Entrance Examination Board--and those Semifinalists whose high scores are confirmed then become Merit Finalists. In the last stage, test scores, high school records, and recommendations are used by a selection committee and by sponsors to choose the Merit Scholars. Table 1 lists the number of Scholars of each sex selected between 1956 and 1960.

Information about precollege vocational plans was obtained from a personal data form completed during the Scholar's senior year in high school. Respondents were encouraged to state a specific choice--e.g., "list mechanical engineering (not engineering), teaching high school physics (rather than

teaching)"--and to avoid stating "undecided" if they could. Information about the career fields that Scholars actually pursued was collected by mailed questionnaire during the summer of 1965; excluding the 15 deceased Scholars, 83 per cent of the total group responded. Data on the later career decisions of 11 per cent of the remaining Scholars were obtained from questionnaire information collected during the previous summer of 1964. Thus, information pertaining to career plans was available for 94 per cent of the total group, and for both sexes equally. Data were available for 2660 males and 1013 females.

Table 1

Number of Merit Scholars Appointed Each Year Between 1956 and 1960

Year	Men	Women
1956	403	152
1957	611	216
1958	709	278
1959	518	219
1960	617	214
Total	2858	1079

Because of the relatively small number of students involved, Scholars' career plans were classified into broad career fields as follows: (1) physics; (2) other physical sciences (e.g., astronomy, chemistry, geology, metallurgy, and meteorology); (3) mathematics; (4) biological sciences (e.g., anatomy, biology, botany, pharmacology, physiology, and zoology); (5) social sciences (e.g., anthropology, economics, psychology, and sociology); (6) humanities and fine arts; (7) education; (8) engineering; (9) medicine; (10) law; (11) business; (12) other (i.e., those not classified in another career field); (13) undecided; and (14) housewife (women only). Separate classifications were made for physics

and mathematics because of the relatively large proportions of Scholars who chose careers in these fields.

Results

Scholars' Initial Career Choices

The distribution of Scholars according to their precollege career plans is shown in Tables 2 and 3. Among men, the physical sciences, mathematics, and engineering were consistently the most popular initial choices. On the other hand, the biological and social sciences were selected least frequently, accounting on the average for only a fraction of 1 per cent of the choices at the time of college entry. The women most often chose the physical sciences, mathematics, and education as precollege career objectives, though the "other" category also contained a sizable proportion. Like the men, the women seldom expressed interest in entering the biological or social sciences.

A substantial proportion of each sex was able to designate a specific career objective prior to beginning college. At least 95 per cent of the males and 91 per cent or more of the female Scholars who entered college each year stated a career choice. This explicitness is unusual; typically, one-quarter to one-third of the entering freshmen each year are unable to report a definite vocational decision.

In light of the recent effort directed toward talent recruitment into science and education programs, it is worthwhile to look briefly at the trends that occurred among these fields over the five-year span involved; the period from 1956 to 1960 is especially interesting because it covers the Sputnik launchings (late 1957). The percentages of Merit Scholars with initial career choices in the combined areas of physical sciences and mathematics remained relatively constant over the time span covered. In 1956, for example,

Table 2

Percentages of Male Scholars with Initial and Final Choices in the Various Career Fields

Career	1956 Scholars			1957 Scholars			1958 Scholars			1959 Scholars			1960 Scholars			Total Scholars		
	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change
Physics	14.6	11.5	-3.1	18.4	11.4	-7.0*	18.6	8.0	-10.6*	16.8	5.5	-11.3*	15.3	9.7	-5.6*	17.0	9.1	-7.9*
Phy. Sci. (other)	15.9	5.4	-10.5*	11.5	5.4	-6.1*	12.1	6.3	-5.8*	7.3	5.9	-1.4	13.6	5.2	-8.4*	11.9	5.7	-6.2*
Mathematics	3.1	10.5	7.4*	4.2*	8.4	4.2*	6.8	10.6	3.8*	10.5	9.5	1.0	10.3	12.2	1.9	7.1	10.2	3.1*
Bio. Science	0.5	3.1	2.6*	0.7	1.4	0.7	0.2	3.5	3.3*	1.2	3.4	2.2*	1.4	3.1	1.7	0.8	2.9	2.1*
Soc. Science	2.3	6.4	4.1*	1.2	5.9	4.7*	1.2	5.8	4.7*	1.6	7.3	5.7*	0.6	6.6	6.0*	1.3	6.4	5.1*
Humanities	2.3	8.7	6.4*	2.5	12.1	9.6*	1.6	11.5	9.9*	3.6	9.7	6.1*	2.5	9.1	6.6*	2.4	10.4	8.0*
Education	3.1	2.8	-0.3	5.8	2.8	-3.0**	5.2	1.9	-3.3*	5.3	3.2	-2.1	7.0	2.3	-4.7*	5.4	2.6	-2.8*
Engineering	31.1	11.0	-20.0*	26.4	9.8	-16.6*	26.3	14.2	-12.1*	25.1	12.8	-12.3*	23.5	14.5	-9.0*	26.2	12.6	-13.6*
Medicine	8.7	10.0	2.3	6.8	7.3	0.5	8.1	8.0	-0.1	7.1	7.7	0.6	6.4	8.7	2.3	7.4	8.2	0.8
Law	4.4	8.7	4.3*	5.9	7.5	1.6	3.9	7.1	3.2*	5.7	8.7	3.0**	4.5	5.8	1.3	4.9	7.5	2.6*
Business	2.6	8.7	6.2*	6.1	9.8	3.7**	4.1	7.9	3.8*	3.0	7.3	4.3*	2.1	5.4	3.3*	3.7	7.8	4.1*
Other	10.0	8.2	-1.8	7.7	10.8	3.1	8.4	8.3	-0.1	7.9	10.5	2.6	7.8	11.1	3.3	8.3	9.8	1.5**
Undecided	1.5	4.9	3.4**	2.8	7.3	4.5*	3.5	7.0	3.5*	4.9	8.5	3.6**	5.2	6.2	1.0	3.7	6.9	3.2*
Total N	390			572			688			494			516			2660		

Note: Net change was evaluated using the test of correlated proportions. *$p \leq .01$; **$p \leq .05 > .01$

Table 3

Percentages of Female Scholars with Initial and Final Choices in the Various Career Fields

Career	1956 Scholars			1957 Scholars			1958 Scholars			1959 Scholars			1960 Scholars			Total Scholars		
	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change	Initial	Final	Net Change
Physics	6.0	1.3	-4.7**	6.3	2.9	-3.4	5.2	1.9	-3.3**	3.7	0.9	-2.8**	4.0	1.7	-2.3	5.0	1.8	-3.2*
Phy. Sci. (other)	11.4	6.0	-5.4	16.1	5.9	-10.3*	8.2	3.0	-5.2*	6.0	3.7	-2.3	9.8	5.8	-4.0	10.1	4.6	-5.4*
Mathematics	0.7	6.0	5.3**	5.9	7.8	1.9	6.0	6.3	0.3	7.9	7.9	--	7.5	6.3	-1.2	5.8	7.0	1.2
Bio. Sci.	0.7	6.7	6.0*	2.9	3.9	1.0	3.0	3.0	--	0.5	3.2	2.7	2.9	4.6	1.7	2.1	4.1	2.0*
Soc. Sci.	3.4	6.7	3.3	4.4	8.3	4.0	4.8	4.8	--	3.7	9.7	6.0	2.3	9.2	6.9**	3.9	7.6	3.7*
Humanities	7.4	24.8	17.4*	4.0	18.1	14.1*	5.6	26.8	21.2*	3.7	15.3	11.6*	4.6	15.0	10.4*	5.0	20.2	15.2*
Education	28.2	12.1	-16.1*	27.8	13.7	-14.1*	33.8	12.0	-22.0*	38.9	16.2	-22.7*	30.5	20.0	-10.5*	32.3	14.5	-17.8*
Engineering	4.0	--	-4.0**	1.5	1.0	-0.5	1.5	0.4	-1.1	1.9	1.0	-0.9	1.2	--	-1.2	1.9	0.5	-1.4*
Medicine	11.4	6.0	-5.4	9.8	4.0	-5.8*	5.6	3.0	-2.6	3.7	2.3	-1.4	3.5	2.9	-0.6	6.5	3.5	-3.0*
Law	0.7	3.4	2.7	1.0	2.9	1.9	0.4	1.5	1.1	1.4	0.5	-0.9	0.6	2.3	1.7	0.8	2.0	1.2**
Business	2.7	2.7	--	4.4	1.5	-2.9	1.1	0.7	-0.4	1.4	1.4	--	1.7	2.3	0.6	2.2	1.6	-0.6
Other	17.5	8.1	-9.4*	13.7	8.3	-5.4	20.1	8.6	-11.5*	20.8	11.6	-9.2*	23.0	9.2	-13.8*	19.1	9.2	-9.9*
Housewife	2.7	8.7	6.0	--	10.7	10.7*	--	17.1	17.1*	--	17.1	17.1*	--	10.3	10.3*	0.4	13.4	13.0*
Undecided	3.4	7.4	4.0	2.4	11.2	8.8*	4.8	11.2	6.4**	6.5	9.3	2.8	8.6	10.9	2.3	5.1	10.2	5.1*
Total N	149			205			269			216			174			1013		

Note:--Net change was evaluated using the test of correlated proportions. *$p \leq .01$; **$p \leq .05 > .01$.

33.6 per cent of the men chose these fields, and by 1960 the percentage had grown to 39.2. Because of the relatively small numbers, however, this increase is probably attributable to nothing more than chance fluctuation in selection from year to year. But the same slight increase, from 18.1 to 21.3 per cent, can also be observed for women. A reverse pattern is evident, however, in the percentages of men choosing another highly publicized occupational field--engineering. Although the slope is not a smooth one across the period covered, there was a decline from 31 per cent in 1956 to 23.5 per cent in 1960. Substantial percentages of women each year planned to enter elementary and secondary education, also widely advertised areas, and these proportions--ranging from 28.2 per cent in 1956 to 30.5 per cent in 1960--remained relatively constant over the time span covered.

Additional comparative data confirm that the physical sciences are especially attractive to very able men. Davis (1965), in studying the career decisions of a national sample of 1961 undergraduates, found that only 10 per cent of the men who earned "above average" college grades (a C to A- average depending on the quality of the college) planned to enter the physical science career fields, whereas 17 per cent of those with grade averages in the top one-fifth had similar plans. Yet in this study of Merit Scholars, 36 per cent had initial plans to enter the physical sciences and, as may be seen from Table 2, 25 per cent actually entered this field. Thus, highly gifted men are more frequently attracted to the physical sciences than are their less talented peers.

Even though interest in engineering declined among Merit Scholars, it cannot be stated with certainty that this field has not held its own in the competitive market for talent. Roughly 24 to 31 per cent of the male Scholars

initially chose engineering, a large proportion of each yearly group by any standard. Though many Scholars later changed these plans, it is clear that engineering is an attractive field to the exceptionally able high school senior.

Stability of Scholars' Career Choices

The precollege career choices of Scholars gives an incomplete picture of how successful various career fields are in attracting talent; the shifts that occur later in career planning give a fuller and more informative picture. Table 2 and 3 show the percentages of each group (1956 to 1960) of Scholars who entered the various career fields and the net gains or losses that resulted from initial to final decisions. Tables 4 (men) and 5 (women) provide specific information for the total group about (a) the percentages, based on initial choice, who either kept their first choice or transferred into other career fields; and (b) the percentages, based on final choice, who remained in their precollege choice or changed fields. Thus the exact rate of movement from one career field to another can be observed.

As Table 2 reveals, not only did the percentages of men who initially selected engineering decline from 1956 to 1960, but also engineering suffered the greatest loss of talent to other career fields. However, the net loss became smaller each year (20 per cent in 1956 but only 9 per cent by 1960); and the percentage with final choices in engineering remained relatively constant over the five-year span covered. These results suggest that the effort to recruit exceptionally talented male freshmen into engineering majors was indeed successful, but many Scholars apparently became dissatisfied after entering college and transferred to other more appealing programs. When the matter is viewed in this light, it is clear that the critical problem facing the engineering field is not one of initially attracting talent but of retaining their precollege recruits.

Table 4

Percentages of Male Scholars Who Kept Their Precollege Career Choice or Transferred into Other Fields, Calculated Separately on the Basis of the Numbers with Initial and Final Choices in the Various Fields

Career	Phy. Science	Physics	Mathematics	Bio. Science	Soc. Science	Humanities	Education	Engineering	Medicine	Law	Business	Other	Undecided	Total N
Physics														
Initial	4.7	27.2	11.1	2.4	6.6	5.1	2.7	12.2	2.4	4.2	5.3	8.0	7.5	452
Final	13.9	50.8	19.5	14.3	36.0	8.3	17.7	16.4	5.0	9.6	11.5	13.9	18.6	
Physical Sci. (other)														
Initial	24.6	9.2	10.7	3.8	3.4	9.2	2.8	7.9	9.2	2.2	6.3	4.7	5.1	317
Final	51.7	12.0	12.5	15.6	17.3	10.5	13.2	7.5	13.2	3.5	9.6	5.8	8.7	
Mathematics														
Initial	1.6	3.7	42.0	1.1	9.0	11.2	--	4.3	4.3	4.8	4.3	8.0	5.9	188
Final	2.0	2.9	29.0	2.6	19.4	7.6	--	2.4	3.7	4.5	3.9	5.8	6.0	
Bio. Science														
Initial	--	10.0	--	55.0	5.0	10.0	--	--	15.0	--	--	5.0	--	20
Final	--	0.8	--	14.3	1.1	0.7	--	--	1.4	--	--	0.4	--	
Social Science														
Initial	--	--	8.6	--	25.7	22.9	2.9	--	2.9	8.6	5.8	14.3	8.6	35
Final	--	--	1.1	--	5.3	2.9	1.5	--	0.5	1.5	1.0	1.9	1.6	
Humanities														
Initial	1.5	--	4.6	--	4.6	46.2	4.6	1.5	3.1	7.7	6.2	10.8	9.2	65
Final	0.7	--	1.1	--	3.2	10.8	4.4	0.3	0.9	2.5	1.9	2.7	3.3	
Education														
Initial	2.1	2.8	15.4	3.5	7.7	23.8	13.3	1.4	0.7	3.5	7.0	14.7	4.2	143
Final	2.0	1.7	8.1	6.5	12.8	12.3	27.9	0.6	0.5	2.5	4.8	8.1	3.3	
Engineering														
Initial	4.6	8.5	6.7	2.0	4.3	4.7	1.3	33.0	2.9	5.0	10.6	8.5	8.0	698
Final	21.2	24.4	17.3	18.2	35.4	11.9	13.2	68.7	9.1	17.6	35.6	22.7	30.6	
Medicine														
Initial	2.0	3.1	3.1	6.1	3.6	6.1	0.5	0.5	60.4	4.6	1.0	6.1	3.1	197
Final	2.7	2.5	2.2	15.6	9.3	4.3	1.5	0.3	54.3	4.5	1.0	4.6	3.3	
Law														
Initial	--	--	0.8	0.8	4.7	13.2	1.6	--	5.4	53.5	7.8	10.1	2.3	129
Final	--	--	0.4	1.3	7.1	6.1	2.9	--	3.2	34.7	4.8	5.0	1.6	
Business														
Initial	2.0	4.0	5.1	1.0	8.0	11.1	2.0	6.1	3.0	12.1	29.3	9.1	7.1	99
Final	1.3	1.7	1.8	1.3	8.8	4.0	2.9	1.8	1.4	6.0	13.9	3.5	3.8	
Other														
Initial	1.4	1.8	5.0	0.9	10.9	18.6	3.6	1.4	3.2	5.9	9.6	27.7	10.0	220
Final	2.0	1.7	4.0	2.6	17.7	14.8	11.8	0.9	3.2	6.5	10.1	23.5	12.0	
Undecided														
Initial	4.1	4.1	8.3	6.2	9.3	16.5	2.1	4.1	8.3	13.4	4.1	6.2	13.4	97
Final	2.7	1.7	2.9	7.8	10.7	5.8	2.9	1.2	3.7	6.5	1.9	2.3	7.1	
Total N	151	242	272	77	169	277	68	335	219	199	208	260	183	2660

Table 5

Percentage of Females in Initial and Final Career Choices

Career	Phy. Science	Physics	Mathematics	Bio. Science	Soc. Science	Humanities	Education	Engineering	Medicine	Law	Business	Other	Housewife	Undecided	Total N
Physics															
Initial	5.9	21.6	15.7	7.8	3.9	9.8	3.9	3.9	7.8	--	2.0	3.9	2.0	11.8	51
Final	6.4	61.1	11.4	9.8	3.7	2.4	1.4	40.0	11.4	--	6.3	2.2	0.7	5.8	
Physical Sc. (other)															
Initial	16.7	1.0	7.8	3.9	9.8	5.9	11.8	2.0	2.9	2.9	2.0	4.9	12.8	15.7	102
Final	36.2	5.6	11.4	9.8	23.6	2.9	8.2	40.0	8.6	15.0	12.5	5.4	9.7	15.3	
Mathematics															
Initial	5.1	1.7	25.4	3.4	6.8	15.3	8.5	--	--	1.7	1.7	6.8	15.3	8.5	59
Final	6.4	5.6	21.4	4.9	12.7	4.4	3.4	--	--	5.0	6.3	4.3	6.6	4.9	
Bio. Science															
Initial	4.8	--	4.8	28.6	4.7	14.3	4.8	--	14.3	--	--	4.8	9.5	9.5	21
Final	2.1	--	1.4	14.6	1.8	1.5	0.7	--	8.6	--	--	1.1	1.5	1.9	
Soc. Science															
Initial	--	--	2.6	--	15.6	28.6	10.4	--	--	--	--	7.8	15.6	20.8	39
Final	--	--	1.4	--	7.8	5.4	2.7	--	--	--	--	3.2	4.4	7.8	
Humanities															
Initial	2.0	--	2.0	2.0	6.0	44.0	4.0	--	2.0	2.0	2.0	10.0	16.0	8.0	50
Final	2.1	--	1.4	2.4	8.2	10.7	1.4	--	2.9	5.0	6.3	5.4	5.9	3.9	
Education															
Initial	2.5	0.6	5.2	3.1	6.5	23.2	25.4	--	0.6	1.8	1.5	8.6	15.0	7.0	327
Final	17.0	11.1	24.3	24.4	40.9	37.1	56.5	--	5.7	30.0	31.3	30.1	36.0	22.3	
Engineering															
Initial	10.5	5.3	10.5	--	5.3	--	21.1	--	5.3	5.3	--	10.5	15.8	10.5	19
Final	4.3	5.6	2.9	--	1.8	--	2.7	--	2.9	5.0	--	2.2	2.2	1.9	
Medicine															
Initial	7.6	--	3.0	10.6	15.2	13.6	12.1	--	18.2	--	--	4.6	6.1	9.1	66
Final	10.6	--	2.9	17.1	18.2	4.4	5.4	--	34.3	--	--	3.2	2.9	5.8	
Law															
Initial	--	--	--	--	--	12.5	25.0	--	12.5	12.5	--	--	25.0	12.5	8
Final	--	--	--	--	--	0.5	1.4	--	2.9	5.0	--	--	1.5	1.0	
Business															
Initial	--	--	13.6	--	8.1	13.6	22.7	--	--	--	4.6	18.2	13.6	4.6	22
Final	--	--	4.3	--	7.4	1.5	3.4	--	--	--	6.3	4.3	2.2	1.0	
Other															
Initial	2.1	1.0	3.1	2.1	8.3	25.4	7.3	0.5	3.6	2.6	2.1	15.0	14.5	12.4	193
Final	8.5	11.1	8.6	9.8	56.4	23.9	9.5	20.0	20.0	25.0	25.0	31.2	20.6	23.3	
Housewife															
Initial	25.0	--	--	--	--	--	25.0	--	--	--	--	25.0	--	--	4
Final	2.1	--	--	--	--	0.5	--	--	--	5.0	--	1.1	--	--	
Undecided															
Initial	3.9	--	11.5	5.8	7.7	19.2	9.6	--	1.9	1.9	1.9	11.5	15.4	9.6	52
Final	4.3	--	8.6	7.3	9.0	4.9	3.4	--	2.9	5.0	6.3	6.5	5.9	4.9	
Total N	47	18	70	41	77	205	147	5	35	20	16	93	136	103	1013

The combined group consisting of physics and other physical sciences also suffered a net loss of men from initial to final choice, but it was not nearly as great as that incurred by engineering. However, because these three categories plus engineering initially drew an average of about 62 per cent of the men for the five-year period, it is not surprising that considerable change occurred and that the other fields, which drew fewer men initially, gained the most. The heavy flow of transfer is almost always away from science-oriented programs with extensive prerequisites and toward programs that are more flexible in their background requirements. The humanities profited most from the turnover.

Table 4 shows that for men, career fields differ considerably in their holding power. Medicine, law, and the biological sciences were the only fields able to keep at least 50 per cent of their initial recruits, whereas the education field had most difficulty holding its precollege enlistees. Considerable change was also observed in a number of the other fields.

Many of the trends in career changes found for men also apply to women except that, in place of engineering, education is the field that initially attracts large proportions of women and subsequently loses many of them. But the proportions finally choosing education improved somewhat from 12.1 per cent in 1956 to 19.5 per cent in 1960. Large proportions of women also transferred out of "other" fields, with the humanities again the biggest single gainer.

These data revealed an increase--from 5.1 to 10.2 per cent--in the proportion of women who became undecided about their career plans during the college years. Moreover, women shift about a good deal from field to field; only one field--the humanities--was able to hold as many as 40 per cent of

its initial recruits. Thus it is all the more remarkable that, despite increased indecision and much turnover among fields, almost 90 per cent of these highly able women still planned to enter occupational careers when the latest followup information was collected in 1965.

Discussion

One point is clear from these results: patterns of selection are evident among our most intellectually able youth, both in their precollege career choices and in the changes that occur during their college years. But what are the factors that affect career choice behavior? Assuming that such factors were known, how could we implement a program designed to insure that occupational shortages are met?

Even though certain critical shortages are widely recognized and broadly publicized, no means exist whereby such problems are handled directly and effectively; instead, haphazard and uncertain methods must be relied on. The competitive market uses wage scales, status, employment opportunities, and other special inducements that no doubt affect the attractiveness of a particular occupation. But such factors operate too late to affect the occupations that require long periods of education and training for entrance. The supply of talent for specialized fields is largely determined by the career choices of talented but inexperienced high school and college students. Highly talented youth have extremely wide freedom of choice among many occupational fields that offer similar inducements. Yet at this point we have little understanding why a particular youngster selects biology or chemical engineering, or becomes totally confused by the complexities of it all and withdraws to the seemingly carefree atmosphere offered by the hippie movement.

It is evident that much transferring among career fields occurs after students enter college. Is much of this unnecessary, and could it be reduced by better high school counseling? Perhaps college programs such as engineering should examine more carefully the factors that contribute to the massive attrition that occurs among their brightest students.

Clearly, the factors which determine precollege career choice and subsequent stability or change remain subtle and elusive. Unfortunately, the detailed knowledge necessary to influence career choice awaits further long-range longitudinal research. Studies are needed which are designed to learn which factors affect which people under which conditions.

PREVIOUS NMSC RESEARCH REPORTS

Volume 1, 1965

Number

1. The Inheritance of General and Specific Ability, by R. C. Nichols (also in Manosevitz, M., Lindzey, G., and Thiessen, D. (Eds.), Behavioral Genetics: Method and Research, Appleton-Century Crofts, in press).

2. Personality Change and the College, by R. C. Nichols (also in American Educational Research Journal, 1967, 4, 173-190).

3. The Financial Status of Able Students, by R. C. Nichols (also in Science, 1965, 149, 1071-1074).

4. Progress of the Merit Scholars: An Eight-Year Followup, by R. C. Nichols and A. W. Astin (also in Personnel and Guidance Journal, 1966, 44, 673-686).

5. Prediction of College Performance of Superior Students, by R. J. Roberts.

6. Non-intellective Predictors of Achievement in College, by R. C. Nichols (also in Educational and Psychological Measurement, 1966, 26, 899-915).

7. Ninth Annual Review of Research by the NMSC Research Staff (superseded by the Tenth Annual Review).

8. Social Class and Career Choice of College Freshmen, by C. E. Werts (also in Sociology of Education, 1966, 39, 74-85).

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1. Participants in the 1965 NMSQT, by R. C. Nichols.

2. Participants in the National Achievement Scholarship Program for Negroes, by R. J. Roberts and R. C. Nichols.

3. Career Choice Patterns: Ability and Social Class, by C. E. Werts (also in Sociology of Education, 1967, 40, 348-358).

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Volume 3, 1967

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2. Paternal Influence on Career Choice, by C. E. Werts (also in Journal of Counseling Psychology, 1968, 15, 48-52).

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4. Study of College Environments Using Path Analysis, by C. E. Werts.

5. Effects of Offers of Financial Assistance on the College-Going Decisions of Talented Students with Limited Financial Means, by N. C. Crawford, Jr.

Volume 4, 1968

1. Career Progress of Merit Scholars, by D. J. Watley.

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